

Applic. No.: 10/614,369

Amdt. Dated July 16, 2004

Reply to Office action of April 16, 2004

REMARKS/ARGUMENTS

Reconsideration of the application is requested.

Claims 1-8 remain in the application. Claims 1-7 have been amended. Claim 8 has been withdrawn.

In item 4 on pages 1-2 of the above-identified Office action, claims 1-7 have been rejected under 35 U.S.C. § 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

More specifically, the Examiner has stated that there appears to be an essential step missing in claim 1 and that the phrase "during a standby mode" appears to be inconsistent with the accepted terminology within the art.

According to the concept of the invention of the instant application, the cooling medium in a lower region of a storage container is in the form of a liquid whereas the cooling medium in an upper region of the storage tank is in the form of a vapor. The container is only partially filled with the medium in liquid phase and a vapor cushion is formed in the

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upper region of the container. A heater is provided in order to form the vapor cushion, which is dimensioned so that a predetermined required pressure should be maintained in the vapor region.

Contrary to the opinion of the Examiner, the way in which the medium is heated is of secondary importance for the invention of the instant application. Rather, it is clear for a person skilled in the art that the goal of the inventive concept of the invention of the instant application is to ensure the supply of enough heat to the medium and the maintenance of the vapor cushion in the upper region of the container. It is, therefore, insignificant whether the medium is heated through contact heating or radiation heating or other similar methods. Therefore, the inventive concept of the invention of the instant application does not depend on the actual fill level of the fluid in the container, namely the border line between the liquid phase and the vapor phase of the medium, or the exact location of the heater. What is important is that the heater provides enough heat flow and heat entry in the medium so that the vapor cushion formed as result of the heat entry in the upper region of the container can be maintained under a predetermined pressure.

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A person skilled in the art, after learning the object of the invention of the instant application (namely the dimension of the heater should be such that the vapor cushion can be maintained under a predetermined pressure), should be able to choose the suitable components and the necessary operation parameters for the heating device without problem and without further experiment.

With regard to the phrase "standby mode," it refers to the fact that according to the inventive concept of the invention of the instant application, the vapor cushion in the upper region of the container is already maintained under a predetermined pressure before the occurrence of an emergency incident, namely during the normal operation of the reactor. The phrase "during a standby mode" has been changed to "during normal operation" in order to even more clearly define the invention of the instant application.

In item 5 on page 2 of the above-identified Office action, claims 1-7 have been rejected under 35 U.S.C. § 112, first paragraph because the specification, while being enabling for fluid liquid, does not reasonably provide enablement for fluid gas.

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As already discussed above, the cooling medium according to the inventive concept of the invention of the instant application should be maintained, during the normal operation of the reactor, in two physical states, namely both in the liquid phase (in the lower region of the container) and in the vapor phase (in the upper region of the container). The essence of the vapor cushion in the upper region of the container is that the medium in the liquid phase in the lower region of the container is at least partially evaporated and thereby the vapor collected in the upper region of the container is maintained permanently and under a certain predetermined pressure. The term "fluid" has been changed to "cooling medium" to clearly differentiate the two phase conditions of the medium.

In item 7 on pages 2-3 of the above-identified Office action, claims 1-7 have been rejected as being indefinite under 35 U.S.C. § 112, second paragraph.

More specifically, the Examiner has stated that the terms "partially filled" and "standby mode" are vague and indefinite and that claim 1 is incomplete for omitting essential steps.

As already discussed above, the medium can be heated by any suitable heating method. The invention of the instant

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application does not depend on the fill lever. The phrase "during a standby mode" has been changed to "during normal operation."

It is accordingly believed that the claims meet the requirements of 35 U.S.C. § 112, first and second paragraphs. Should the Examiner find any further objectionable items, counsel would appreciate a telephone call during which the matter may be resolved. The above-noted changes to the claims are provided solely for cosmetic and/or clarificatory reasons. The changes are neither provided for overcoming the prior art nor do they narrow the scope of the claims for any reason related to the statutory requirements for a patent.

In item 9 on pages 3-4 of the above-mentioned Office action, claims 1-6 have been rejected as being anticipated by Murase et al. (US Pat. No. 4,859,401) under 35 U.S.C. § 102(b).

In item 10 on page 5 of the above-mentioned Office action, claims 1 and 6-7 have been rejected as being anticipated by Admitted Prior Art under 35 U.S.C. § 102(b).

In item 12 on pages 5-6 of the above-mentioned Office action, claim 7 has been rejected as being unpatentable over Murase et

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al. and further in view of the Admitted Prior Art under 35 U.S.C. § 103(a).

As will be explained below, it is believed that the claims were patentable over the cited art in their original form and the claims have, therefore, not been amended to overcome the references. However, the language of claim 1 has been modified in an effort to even more clearly define the invention of the instant application.

Before discussing the prior art in detail, it is believed that a brief review of the invention as claimed, would be helpful.

Claim 1 calls for, inter alia:

heating the cooling medium by supplying heat to an upper region of the pressure accumulator, and during normal operation before the occurrence of an incident, evaporating some of the cooling medium in the pressure accumulator for generating and maintaining a pressure, and for generating a vapor cushion.

Murase et al. do not disclose the concept of the invention of the instant application of holding the cooling medium both in liquid form and as a vapor cushion in a region thereabove.

Rather, it is clear from the embodiments described in Murase et al. that the cooling medium in the water storage container 32 should be held in one region as a high-temperature coolant 33 and otherwise as a low-temperature coolant 34. Apparently,

the high-temperature coolant 33 according to Murase et al. is also in liquid form. After the occurrence of an emergency incident, the pressure drop as a result of the coolant loss is passive and a spontaneous evaporation of the high-temperature coolant 33 follows without external intervention. An automatic injection of the low-temperature coolant 34 in the region takes place after the pressure increase occurred with the spontaneous evaporation.

In other words, it is clear from Murase et al. that the high-temperature coolant 33 is evaporated only after the occurrence of an incident. The pressure built up by the evaporation is then used to supply the low-temperature coolant 34.

Therefore, evaporation of the high-temperature coolant 33 after the occurrence of an incident according to Murase et al. is a fundamental and substantial part of the overall concept disclosed in Murase et al. A person skilled in the art cannot omit or modify this essential step without substantially deviating from the teaching of Murase et al.

In contrast, the concept of the invention of the instant application does not provide the evaporation after occurrence of an incident. Rather, the production of a vapor cushion should already take place during normal operation, namely before the occurrence of the incident, so that the vapor

cushion already exists at the beginning of the incident and does not have to first be formed then. This difference, namely that the vapor cushion already exists, provides the invention of the instant application with substantial advantages such as a considerably shortened reaction time of the entire system as well as a considerably accelerated injection rate of the cooling medium in the required regions.

The Admitted Prior Art also only discloses the evaporation after the occurrence of the incident (see especially page 3, line 22 to page 4, line 1 of the specification).

Clearly, none of the references shows "heating the cooling medium by supplying heat to an upper region of the pressure accumulator, and during normal operation before the occurrence of an incident, evaporating some of the cooling medium in the pressure accumulator for generating and maintaining a pressure, and for generating a vapor cushion," as recited in claim 1 of the instant application.

Claim 1 is, therefore, believed to be patentable over the art and since all of the dependent claims are ultimately dependent on claim 1, they are believed to be patentable as well.



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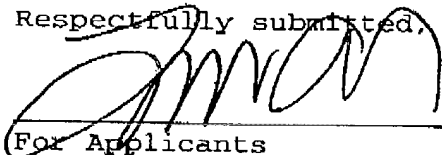
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In view of the foregoing, reconsideration and allowance of claims 1-7 are solicited.

In the event the Examiner should still find any of the claims to be unpatentable, counsel would appreciate a telephone call so that, if possible, patentable language can be worked out.

If an extension of time for this paper is required, petition for extension is herewith made. Please charge any fees which might be due with respect to 37 CFR Sections 1.16 and 1.17 to the Deposit Account of Lerner and Greenberg, P.A., No. 12-1099.

Respectfully submitted,



LAURENCE A. GREENBERG  
REG. NO. 29,308

For Applicants

YC

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Lerner and Greenberg, P.A.  
Post Office Box 2480  
Hollywood, FL 33022-2480  
Tel: (954) 925-1100  
Fax: (954) 925-1101